

REMARKS

Claims 2-6 are all the claims pending in the application. Claims 4 and 6 have been withdrawn from consideration as being directed to a non-elected species. Reconsideration and allowance of all the claims are respectfully requested in view of the following.

Claim Rejections - 35 U.S.C. § 102

- The Examiner rejected claim 2 under §102(e) as being anticipated by US Patent 6,464,615 to Kumura et al. (hereinafter Kumura). Applicants respectfully traverse this rejection because Kumura fails to disclose every element as set forth and arranged in the claim.

Claim 2 sets forth a toroidal continuously variable transmission comprising: a casing; input and output disks; trunnions; shift shafts; power rollers; a support member fixed directly to said casing and supporting said pivot shafts of said trunnions so as to be shifted in an axial direction thereof and in an inclined rotation direction thereof; needle roller bearings for supporting said pivot shafts of said trunnions on said support member; and spherical-surface bearings for supporting said needle roller bearings; wherein said spherical-surface bearings each includes spherical-surface-shaped inner and outer races.

For example, as shown in Fig. 1, one embodiment of the present invention is a toroidal continuously variable transmission comprising: a casing 1; trunnions 14 having pivot shafts 16; a support member 55 fixed directly to said casing 1 and supporting said pivot shafts 16 of said trunnions 14 so as to be shifted in an axial direction thereof and in an inclined rotation direction thereof; needle roller bearings 53 for supporting said pivot shafts 16 on said support member 55; and spherical-surface bearings 50 for supporting said needle roller bearings 53; wherein said spherical-surface bearings 50 each includes spherical-surface-shaped 54a, 55a inner and outer races 54, 55.

By fixing the supporting member directly to the casing, the claimed invention has advantages in (a) obtaining a positioning accuracy of the trunnions, and (b) downsizing a vertical dimension of the device, because the invention needs fewer elements to set the trunnions within the casing than does Kumura, which uses a pivot mechanism to rotatably support a link that is attached to the trunnions.

In contrast to the presently claimed invention, Kumura discloses an upper link 5 that is supported—by a link 7, which is attached to case 1—for rotation about pin 15. See, for example, Figs. 1, 3A & B, as well as col. 3, lines 62-64, col. 4, line 53 - col. 5, line 2. Because the upper link 5 rotates about pin 15, it is not “fixed directly to the casing” as set forth in claim 2.

For at least any of the above reasons, Kumura fails to anticipate claim 2.

- The Examiner rejected claims 2 and 5 under §102(e) as being anticipated by JP 9-42401 to Hibi (hereinafter Hibi). Applicants respectfully traverse this rejection because Kumura fails to disclose every element as set forth and arranged in the claims.

Again, claim 2 sets forth a support member fixed directly to the casing and supporting the pivot shafts of the trunnions.

In contrast to that in claim 2, and similarly to Kumura, Hibi discloses that a link 4, 4' that is supported—by a bearing 7, 116 that is attached to the casing—for rotation. See Figs. 1, 7, 4, 5, 9, and 10, for example. Accordingly, because the link 4, 4' rotates, it is not “fixed directly to the casing” as set forth in claim 2.

For at least any of the above reasons, Hibi fails to anticipate claim 2. Likewise, Hibi fails to anticipate dependent claim 5.

Claim Rejections - 35 U.S.C. § 103

The Examiner rejected claim 3 under §103(a) as being unpatentable over either Kumura or Hibi, in view of US Patent 2,345,564 to Allen (hereinafter Allen). Applicants respectfully traverse this rejection because the references fail to teach or suggest all the elements as set forth in the claims.

The Examiner notes that each one of Kumura and Hibi fails to teach or suggest a spherical bearing having a cut-out portion in an inner peripheral surface thereof.¹ Additionally, as noted above, each one of Kumura and Hibi fails to teach or suggest a trunnion-support member fixed directly to the casing, as set forth in Applicants' claims.

¹ Office Action at page 3, item 6, paragraph 2.

The Examiner then relies on Allen as teaching a spherical bearing having a cut-out portion. However, Allen fails to teach or suggest a support member fixed directly to a casing in a continuously variable transmission.

Accordingly, even assuming that one of ordinary skill in the art were motivated to combine either Kumura or Hibi with Allen, as suggested by the Examiner, any such combination would still not teach or suggest a support member fixed directly to a casing, as set forth in Applicants' claims.

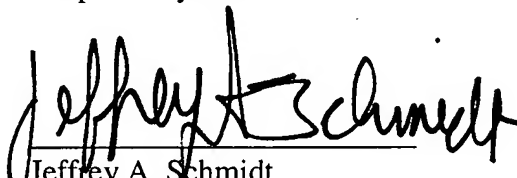
For at least any of the above reasons, Kumura, Hibi, and Allen, fail to render obvious claim 3.

Conclusion

In view of the above, reconsideration and allowance of this application are now believed to be in order, and such actions are hereby solicited. If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.

The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

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